

ABSTRACT OF THE DISCLOSURE

[0037]

The present invention is directed towards a method and an apparatus for accurately estimating the tension or clamp force in a bolted joint. An installed fastener is rotated and the torque necessary to rotate the fastener and the angle through which the fastener is rotated are measured. The angle and torque values are plotted against one another such that the angle values are plotted on an angle axis and the torque values are plotted on a torque axis. A tangent is extended from the plot towards the angle axis. The point at which the tangent crosses the angle axis is defined as zero degrees and is called the "elastic origin". The known angle through which the fastener rotates is used to scale the angle axis. The angle from the elastic origin to the point at which the tangent was drawn is defined as the M-alpha angle and is directly proportional to the clamp force created by the bolted joint or tension in the fastener.